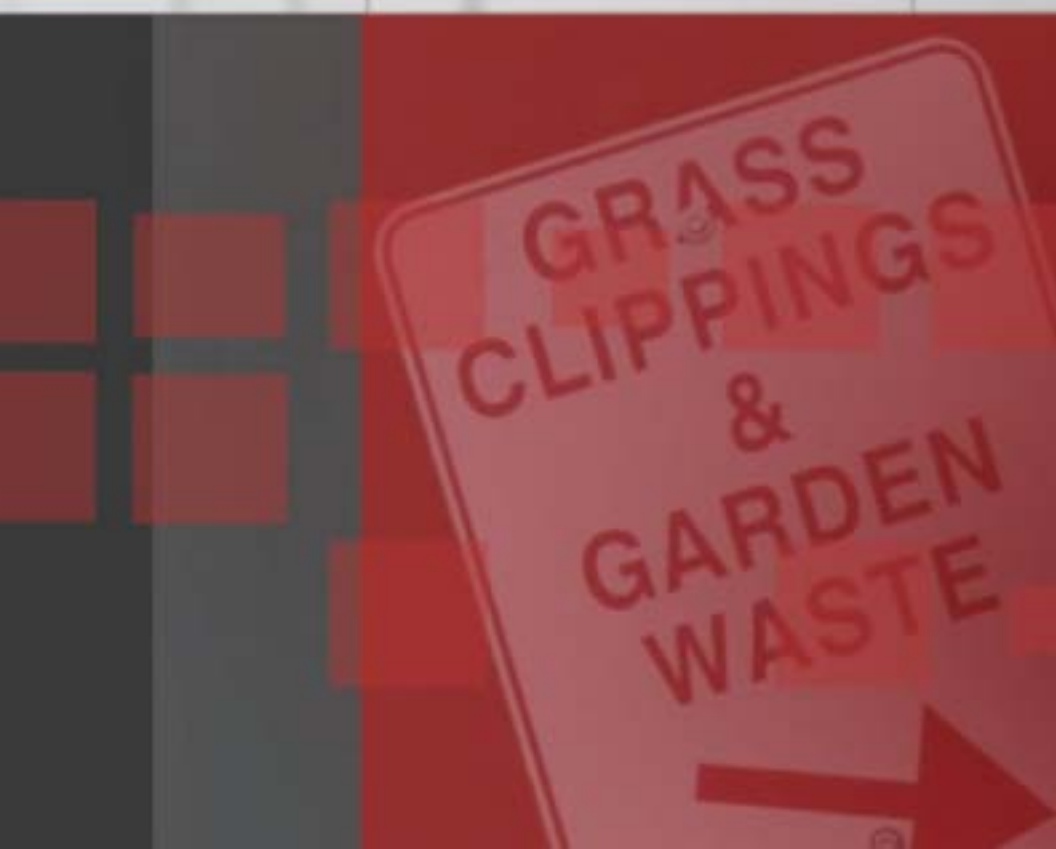
YARD WASTE HANDBOOK



A publication of the Iowa Department of Natural Resources 2004

Wallace State Office Building
502 East 9th Street
Des Moines, IA 50319-0034

Phone: (515) 281-8941
Fax: (515) 281-6794
Web Site: www.iowadnr.com

Jeffrey R. Vonk, **Director**
Wayne Gieselman, **Administrator, Environmental Services Division**
Brian Tormey, **Chief, Energy and Waste Management Bureau**

Contributors: Jeff Geerts, Jodi Jeanes, Jason Martel
Editor: Julia Tack

TABLE OF CONTENTS

INTRODUCTION

MANY Iowa communities are looking for ways to handle the grass clippings, leaves and tree wood trimmings generated by their citizens. With both landfilling and burning of yard waste by local governments against the law, the question persists: "What should we do with all this stuff?"

THIS handbook provides three easy options for managing yard waste, with the basic information and tools necessary to get started. It also provides an easy-to-understand breakdown of Iowa laws related to yard waste management, and resources for additional help.

MANY Iowa communities are managing yard waste conveniently and economically, with little impacts on the environment. This handbook will help you on your way.

CHAPTER 1

Get to Know Iowa Laws about Yard Waste Management

Here is a summary of the important requirements and guidelines about yard waste management for Iowa communities. A full description of requirements can be found in Iowa Administrative Code 567 Chapter 105 (455B, 455D).

YARD WASTE IN IOWA LANDFILLS

Since 1991, Iowa has prohibited yard waste from being deposited in landfills.

BURNING OF YARD WASTE BY LOCAL GOVERNMENTS

Iowa law allows only the burning of tree trimmings by local governments. Burning grass clippings and leaves is prohibited. Check with local and county officials about rules pertaining to open burning.

YARD WASTE COLLECTION PROGRAM REQUIREMENTS

Local governments in Iowa must offer a yard waste collection program, such as curbside collection or drop off sites.

YARD WASTE COMPOST FACILITIES

If a community is interested in operating a compost facility, here are the major requirements:

PERMITTING

Most yard waste composting facilities in Iowa are small (taking in less than two dry tons of yard waste per day) and therefore do not need to apply for a permit. However, the operator of the facility must use best management practices (see distance, surface and sign requirements below), and notify the Iowa DNR in writing before operations begin. The notification must include:

- Location and legal description of the facility
- Landowner's name, telephone number and mailing address
- Name, phone number and address of the responsible party
- Annual capacity of the facility
- Method of composting to be used
- Source of yard waste and any bulking agent to be used

Information can be sent to:
Compost Coordinator • Department of Natural Resources
909 E Main St. Suite 4 • Manchester, IA 52057

SETBACK DISTANCES

When siting a new facility, it must be located:

- 500 feet from any existing inhabited residence
- 200 feet from public wells
- 100 feet from private wells
- 100 feet from flowing or intermittent ponds, streams, lakes or rivers
- 50 feet from property lines
- Outside of wetlands

SURFACES

Composting facilities require all-weather surfaces allowing accessibility during bad weather and able to support maintenance equipment. Some examples of appropriate surface materials include:

- Compacted soil or clay
- Compacted granular aggregates
- Concrete
- Asphalt
- Compacted asphalt millings
- Compacted fly ash products

SIGNS

Iowa law requires a sign be posted at the composting facility stating:

- Name of the operation
- Operating hours
- Materials accepted or a sign with the message "All materials must have prior approval."
- 24 hour emergency contact number for a responsible official

IOWA LAWS ON THE WEB
www.iowadnr.com/rules/567.html

CHAPTER 2

Choosing Your Community's Yard Waste Management Strategy

So you want to do a better job managing your community's yard waste? Much can be accomplished by adopting one, or a combination, or the following three strategies:

- Land Application
- Creating a Compost Facility or Sharing a Regional Facility
- Educating Citizens

Each of these options has unique advantages. Land application of yard waste can be an inexpensive and immediate alternative, but can be challenging for greater quantities of materials. A compost facility takes more start-up time and resources, but is relatively easy to manage and creates a usable end product. Citizen education tends to be more costly up front, but may have the greatest impacts over the long term because it changes the way residents manage their own yard waste for years to come.

Most importantly, a community can choose any or all these options as practical solutions for their yard waste concerns.

A WORD ABOUT BURNING

Burning of grass and leaves is a health risk to many Iowans. Leaf smoke can cause increased hospitalizations to those most at risk of respiratory illnesses such as the very young and old, and people with lung diseases and asthma. Burning also causes harmful impacts to the environment through increased air pollution.

Because of the negative impacts, many Iowa communities have enacted open burning bans. Additionally, Iowa law prohibits local governments from burning leaves and grass clippings.

CHAPTER 3
Land Application

LAND application offers an alternative for managing yard waste without the costs and other resources necessary for composting or community education. It also provides benefits for area farmland.

LAND application works by incorporating leaves, grass and other non-woody yard waste into the soil. It is most suitable for communities with farmland nearby. The material needs to be free of contaminants such as yard waste bags, stones, brush and trash.

APPLICATION of yard waste can be accomplished with typical farm equipment; however, some experimentation may be necessary to determine the best application rates and methods. Leaves and grass clippings are simply spread on agricultural land and plowed or tilled under the soil.

MANY Iowa communities contract with local farmers for areas to apply yard waste. Be sure to adhere to contracts and agreements made with those landowners. Keep in mind the following three best management practices:

- Keep yard waste out of waterways
- Prevent yard waste from leaving the land application site
- Work to prevent odor problems by spreading out materials and not applying too much in a given area.

IOWA law limits the amount of materials that can be land applied to two dry tons per acre per year. A complete description of Iowa requirements regarding land application is available in Iowa Administrative Code 567 Chapter 121 at www.iowadnr.com/rules/567.html

CHAPTER 4

Creating a Compost Facility

Composting is one of the most economical and environmentally friendly ways of managing yard waste. Good quality compost, which can be used for improving soil quality or gardening purposes, can be developed when a community proactively controls the composting process.

COMPOST BENEFITS

- Improves soil conditions
- Decreases chemical fertilizer needs
- Adds organic material and water retention capability to the soil
- Reduces erosion and runoff
- Suppresses weeds

AN EASY SCIENCE LESSON ON COMPOSTING

OXYGEN LEVELS

The microorganisms that break down yard waste require oxygen to live. To provide adequate oxygen in your compost, be sure to turn the piles frequently in the beginning to keep the pile under 160°F and less frequently in the winter to keep temperatures up. Not turning the piles can cause odor problems.

TEMPERATURE

To begin the composting process, maintain a temperature of at least 131°F in the piles for 15 consecutive days, with materials turned at least five times during the 15 days. Monitor and record temperatures every 75 feet along compost piles. If the pile temperature goes above 160°F, it needs to be turned. A compost thermometer can be purchased on the Internet.

MOISTURE

If moisture in compost piles is too low, materials will not break down. Lack of moisture also leads to a greater fire risk. If too much moisture exists, it can cause odor problems.

Monitoring moisture levels can be done inexpensively. Simply test by hand following these steps:
Take a handful of material and squeeze –

- If water drips out, the material is likely too wet and needs to be turned or have some drier material added.
- If the material feels dry, water may need to be added.

Composting material should feel like a moist sponge.

CARBON AND NITROGEN – MANAGING YOUR "GREENS AND BROWNS"

Carbon and nitrogen are primary elements that organisms use for food. If carbon is too high, microorganisms cannot grow and composting will not occur. If nitrogen is too high, ammonia will develop and cause odor problems. Because of these issues, it is important to have the right balance of materials in the compost pile.

COMPOST RECIPES ON THE WEB

For more information about creating the right mix of materials in compost piles, go to:

www.georgiahikes.com/lib/compost_calc.htm

1. BROWN MATERIALS: LEAVES AND TREE TRIMMINGS

Leaves tend to compost well and contain moderate moisture. Wet leaves may need to be spread out and dried before composting to prevent odor problems. Conversely, dry leaves may require water be added to the pile. Tree trimmings can be beneficial in your compost as a bulking agent; however, limit the amounts of woody materials since they decompose slowly.

2. GREEN MATERIALS: GRASS CLIPPINGS

Grass and other green wastes should not be composted alone, since they tend to mat down and may cause odor problems. Moisture is rarely a problem with grass clippings.

PREPARING YOUR SITE

If your community has decided to compost, here are tips and considerations for planning and operating the facility. Remember to first review the legal requirements listed on page six.

FACILITY SIZE

When choosing a site, it should be large enough to accommodate all incoming yard waste. Use the following factors to estimate the size of the facility:

- At least one acre for every 6,000 cubic yards of waste, which is about 900 tons
- Drop-off and unloading area
- Storage area for finished compost

WATER RUNOFF

The facility must be designed to prevent water run-off and to avoid formation and discharge of leachate which is the liquid that seeps through decomposing organic material. Any leachate that forms must be treated as wastewater in an appropriate treatment facility.

COMPOSTING SURFACE AND SIGNS

Yard waste facilities require all-weather surfaces and appropriate signs. See requirements on page seven.

EQUIPMENT

Mixing and turning compost piles can be accomplished with a front-end loader, a bucket-loader on a tractor, or equipment with similar capabilities. A very small facility may only need one tractor or loader to keep the compost turned.

COLLECTING MATERIALS TO COMPOST

Communities are required to offer either curbside collection or drop off sites for citizens to dispose yard waste.

CURBSIDE COLLECTION is convenient for residents and often results in the most yard waste for composting, but is also more costly. Bags or yard waste stickers are often provided for sale by the facility at local retailers and other convenient locations.

DROP OFF SITES are less expensive to operate, but require transporting by residents. If the drop-off location is at the facility, be sure traffic directions are well marked. Composting facilities that are a significant distance from residents may consider a more centrally located drop-off site. Be sure to transport yard waste materials from the site frequently to avoid odor and other problems.

All materials should be checked for litter and illegally dumped materials.

MANAGING THE COMPOST PILE

Fall is the ideal time to start a composting facility because leaves cause fewer odor problems and can be blended later with grass materials in the spring.

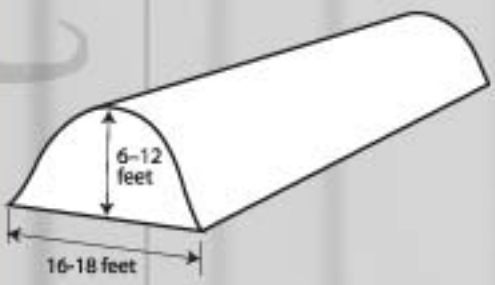
WINDROWS

A windrow is a long pile of compost that is usually trapezoid shaped with the base of the windrow two to three times wider than its height. Putting compost in windrows is often the easiest and most economical way of managing the piles.

WINDROW TIPS AND TROUBLE SHOOTING

- Turn the windrow at least weekly at the start of the process or whenever temperatures in the pile rise above 160°F.
- Windrows should be turned less frequently in the winter to maintain heat and more frequently in the summer to avoid odor. In the winter, turn the pile after it snows to add moisture. Spring means lots of grass, so plan to turn more often at that time.
- Windrow size can affect the rate of composting. A pile that is too large may emit more odor due to poor aeration in the center of the pile.
- Enough space should be left between windrows for equipment to move and mix materials.
- Additional bulking agents such as dry wood chips can help avoid odor problems.

Materials should be mixed before windrowing to help the composting process and prevent odor. The windrows can be constructed using a front-end loader or a truck with a dump box. Most windrows end up being about 16 to 18 feet wide, six feet tall, and any length. However, a windrow can be just as effective with smaller dimensions to fit the location's size and needs.



CURING

After several months, yard waste materials enter the curing phase and are allowed to sit with little or no turning. Materials that are curing should be kept separate from new materials brought in for composting. Finished compost will closely resemble soil and will be reduced to 25-50 percent of its original volume. The facility should have areas for curing and storing finished compost. Compost is ready for use after 12 to 18 months from the beginning of the process.

WHAT TO DO WITH COMPOST

Most small compost facilities have three attractive options for using finished compost.

- CITY USE – the finished compost material is an excellent, free alternative for cities to use in community gardens and parks, and to reduce erosion at construction sites.
- GIVE IT AWAY – the facility can offer free compost or sell compost to farmers, residents and businesses. Compost is an eco-friendly material that can be a major benefit for local environmental protection efforts.
- LAND APPLY – compost can be land applied to help improve soil quality and prevent run-off.

Photo By Jennifer Welch, URBAN

CHAPTER 5
Community Education

Involving citizens in yard waste management can often have long-lasting and cost-effective impacts for a community. Here are several strategies for encouraging citizens in their yard waste activities. Cities can use public relations activities such as newspaper articles, posters, flyers and events to promote these strategies.

LEAVE IT LIE CAMPAIGN

"Leave It Lie" or "Mow It High, Leave It Lie" campaigns encourage residents to keep their lawns at longer lengths, mow slightly more often, and leave the grass clippings on the lawn.

HOME GARDEN MULCHING

Grass and leaf clippings used as mulch in home gardens prevents weed growth, improves soil moisture and improves soil organic matter content. It also provides a way to recycle yard wastes such as wood chips and shredded bark.

HOME COMPOST BIN SALES

Home composting is often less expensive than running a large central facility. Educating and encouraging home composting can reduce the volume of yard waste that is collected and managed.

CHIPPING FOR MULCH

Many Iowa communities offer chipping-for-mulch programs to help manage tree trimmings. The city needs a chipper, space to operate it, and somewhere to store mulch. A good-sized chipper can be a sizable investment, so it may be in the city's interest to rent one or share with surrounding communities. Material is either collected or dropped off, then chipped by the city. The mulch should be give one to two weeks to stabilize before it is given or sold to residents.

LEARN MORE

Iowa State University Extension offers several flyers on yard waste management for residents. Contact (515) 294-6222 for copies, or visit the Web site: www.extension.iastate.edu/pubs/ and request the appropriate publication number:

- *Iowa "Don't Bag It" Lawn Care* publication PM-1392
- *Weed Management in the Garden* publication PM-666
- *Using Mulches in Managed Landscapes* publication PM-SUL 12
- *Composting Yard Waste* publication PM-683

RESOURCES

Mulch Iowa brochure, Iowa Department of Natural Resources, (515) 281-8941 or website www.mulchiowa.com

Photos By Lynn Betts, USDA NRCS

CHAPTER 6

Where to Get More Help

TRAINING FOR COMPOST FACILITY OPERATORS

The Iowa DNR and Kirkwood Community College offer an online training course on compost facility operations. Topics include the physical science of composting, material quality and classification, facility operations, marketing the end product, and regulations. Try a sample of the online courses at:
www.et-online.org/et_sample.html

To register for the course, contact the Hazardous Materials Training and Research Institute at Kirkwood Community College:
Phone: (800) GO-HMTRI or (319) 398-5893
Fax: (319) 398-1250 E-mail: hmtri@kirkwood.cc.ia.us

RESOURCE BOOKS AND MATERIALS

Compost Facility Planning Guide
U.S. Composting Council
4250 Veterans Memorial Highway
Suite 275
Holbrook, NY 11741
(631) 737-4931
www.compostingcouncil.org

Field Guide to Compost Use
(Book or CD)
U.S. Composting Council
4250 Veterans Memorial Highway
Suite 275
Holbrook, NY 11741
(631) 737-4931
www.compostingcouncil.org

On Farm Composting Handbook
Natural Resource, Agricultural
and Engineering Service
152 Riley-Robb Hall
Cooperative Extension
Ithaca, NY 14853
(607) 255-7654
www.nraes.org

DNR CONTACTS AND TECHNICAL ASSISTANCE

Website: www.iowadnr.com

Iowa Department of Natural
Resources
909 W Main, Suite 4
Manchester, IA 52057
(563) 927-2640

502 E Ninth St.
Des Moines, IA 50319
(515) 281-8176

www.iowadnr.com